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Patent**REMARKS**

Applicants thank the Examiner for the telephonic communication extended to the Applicants' representative on January 24, 2002 and for kindly indicating that a supplemental response would be considered.

Claims 1-30 are in the case.

Claims 1, 20, 28 and 30 have been amended to particularly point out and distinctly claim the subject matter of the claimed invention. Support for the amendments to the claims can be found throughout the original disclosure, e.g., in the original claims. A marked-up version of the changes made to the claims by the current amendment is attached. The attached pages are captioned **"Version with Markings to Show Changes Made."**

Entry of this amendment is respectfully solicited since it is believed to place the application in condition for allowance, or at a minimum to reduce the issues for appeal.

Applicants respectfully request favorable reconsideration of the subject application in light of the above amendments and the following remarks.

I. New Issues Stated in the Advisory Action

The Advisory Action stated, "the limitations of the polymer concentrations raises new issues". Applicants respectfully traverse for the following reason.

In the response to the final Office Action submitted on January 7, 2002, "the total polymer concentration" in claims 1, 20, 30 were amended to "the concentration of said thermoplastic polymer". Here, the amended language "the concentration of said

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thermoplastic polymer” conveys the same meaning as the language used in the original claims “said polymer concentration”, of which the antecedent basis is the concentration of the thermoplastic polymer as component (b). The search and examination have been conducted based on the original claims. Therefore, the amended language “the concentration of said thermoplastic polymer” did not raise any new issues that would require additional search or consideration.

As the amendment submitted on January 7, 2002 did not enter, Applicants propose to amend the claims by submitting this supplemental response according to the telephonic conversation with the Examiner on January 24, 2002. The claim language “the total polymer concentration” has been amended to “said polymer concentration”, which, as addressed above, is the phrase used in the original claims, thus, would not raise any new issues, either.

Accordingly, Applicants submit that the rejection based on new issues or issue of new matter stated in the Advisory Action has been overcome and request that it be withdrawn.

II. Rejection of Claims 1-30 under 35 U.S.C. 102 (b) over Alper et al

Claims 1-30 stand rejected under 35 U.S.C. 102 (b) over US 5,149,741 to Alper et al. (hereafter “Alper”) as stated on pages 2-4 of the final Office Action mailed on November 6, 2001.

Applicants respectfully traverse the rejection because Alper fails to teach or suggest a hot melt composition including unconventionally less amount of high Tg tackifying resin than that of the thermoplastic polymer, as recited in the independent

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claims 1, 20 and 30 and as clarified by the amendment. Alper also fails to teach or suggest a hot melt composition including a thermoplastic polymer selected from the group consisting of copolymers and terpolymers of ethylene; amorphous polyalphaolefins, homogenous ethylene/ α -olefin interpolymers, and mixtures thereof, as recited in the independent claims 20, 22 and 28.

Independent claims 1, 20, 28 and 30 have been amended to clarify these important aspects of the invention.

As addressed in the specification, both heat resistance and cold temperature resistance are important properties for hot melt adhesives. Traditionally, higher heat resistance is achieved by using e.g., higher amounts of tackifying resin(s) than that of the base polymer, which, however, would adversely affect the cold temperature resistance. Cold temperature resistance is improved by using, e.g., higher amounts of the base polymer, which, on the other hand, would adversely affect the heat resistance. Therefore, it is very difficult to improve both properties simultaneously as one is improved at the cost of the other. (specification, page 2, paragraph 2). Surprisingly, the subject invention has achieved both better heat resistance and cold temperature resistance by using unconventionally lower amount of the high Tg tackifying resin. (specification, page 5, lines 8-14).

A). Independent Claims 1, 20 and 30

Each of the independent claims 1, 20 and 30 is directed to a hot melt adhesive composition that requires, among other things, that the total high Tg tackifying resin concentration is less than the thermoplastic polymer concentration. The thermoplastic

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polymer is a base polymer as described in the specification (page 5, line 25), which would be well understood by person skilled in the art upon reading the specification.

Alper discloses a hot melt adhesive composition including, among other things, 15 to 40 parts by weight of a styrene-isoprene-styrene (SIS) block copolymer, and 40 to 70 parts by weight of a compatible tackifying resin. (col. 4, lines 4-15).

Alper teaches that SIS block copolymer is a base polymer (col. 1, lines 27-30; col. 2, lines 30-49; col. 3, lines 10-20). Alper also teaches that the maximum amount of SIS block copolymer is 40 parts and the minimum amount of the tackifying resin is 40 parts. That is, Alper's fundamental definition of his composition expressly teaches that at least equal or more amount of tackifying resin is used relative to that of the SIS block copolymer as base polymer.

Example 2 of Alper is not to the contrary. Alper specifies in Example 2 an adhesive composition including 35 parts SIS block copolymer as base polymer, 40 parts hydrogenated dicyclopentadiene resin as tackifying resin, 10 parts aromatic reinforcing resin (Endex 155 from Hercules Inc.) and other ingredients c.g., plasticizer, antioxidant, etc. (col. 10, example 2). Clearly, the exemplified amount (40 parts) of at least one tackifying resin is more than the exemplified amount (35 parts) of SIS block copolymer as base polymer. Additionally, "10 parts aromatic reinforcing resin (Endex 155 from Hercules Inc.)" is also a tackifying resin, not a base polymer, which would be clearly understood by person skilled in the art following the teachings of Alper. For example, throughout his patent, Alper uses the term "polymer" or "copolymer" for the base polymers (Alper, col. 1, line 27-col. 2, line 55), and the term "resin", such as "tackifying resin", "endblock reinforcing resins", "aromatic reinforcing resin", etc. for non-base-

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polymer materials or resins added to improve the properties of the adhesive composition. (Alper, col. 3, lines 20-27; col. 7, lines 1-48). Thus, the exemplified total amount of tackifying resins in Example 2 is, in fact, 50 parts (40 parts+10 parts) and the exemplified amount of SIS block copolymer as base polymer is 35 parts. Undoubtedly, Alper illustrates an adhesive composition including higher amount of tackifying resins than that of SIS block copolymer as base polymer. This is entirely consistent, as it must be, with Alper's fundamental definition about the ranges of the components in his composition, as defined at col. 4, lines 4-15 as discussed above.

In contrast, each of the adhesive compositions of claims 1, 20 and 30 requires less amount of a high Tg tackifying resin than that of the thermoplastic polymer as base polymer. That is, the total high Tg tackifying resin concentration is less than the thermoplastic polymer concentration. Alper, therefore, fails to teach at least that aspect of claims 1, 20 and 30. Alper also fails to even remotely suggest the combination of a high Tg tackifying resin with such a less amount as discussed above. In addition, with regard to claim 20, Alper also fails to even remotely suggest that the thermoplastic polymer is selected from copolymers and terpolymers of ethylene, amorphous polyalphaolefins, homogenous ethylene/ α -olefin interpolymer, and mixtures thereof.

Therefore, Alper, failing to teach each and every element of claims 1, 20 and 30, does not and cannot anticipate these independent claims.

B). Independent Claims 22 and 28

Independent claim 22 is directed to a hot melt adhesive composition that requires including, among other things, at least one thermoplastic polymer selected from amorphous polyalphaolefins, homogenous ethylene/ α -olefin interpolymer, and mixtures

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thereof. The amended independent claim 28 is directed to a hot melt adhesive composition that requires including, among other things, at least one thermoplastic polymer selected from amorphous polyalphaolefins and mixtures thereof. The thermoplastic polymer is a base polymer as described in the specification.

Alper teaches an adhesive composition including only SIS block copolymer as base polymer. Evidently, Alper fails to teach an adhesive composition including at least one thermoplastic polymer selected from either amorphous polyalphaolefins, homogenous ethylene/ α -olefin interpolymers, and mixtures thereof, as recited in claim 22, or amorphous polyalphaolefins and mixtures thereof, as recited in claim 28. Alper also fails to even remotely suggest the combination of a high Tg tackifying resin with the selected thermoplastic polymer.

Alper, failing to teach each and every element of claims 22 and 28, does not and cannot anticipate these independent claims.

All the dependent claims also cannot be anticipated, *inter alia*, by Alper for the reasons delineated above, because each of them is directed to a combination including everything recited in the corresponding independent claim.

Accordingly, Applicants submit that the rejection of claims 1-30 under 35 U.S.C. 102 (b) over Alper has been overcome and request that it be withdrawn.

III. Rejection of Claims 1-30 under 35 U.S.C. 103 (a) over Alper et al

Claims 1-30 stand rejected under 35 U.S.C. 103(a) over US 5,149,741 to Alper et al. (hereafter "Alper") as stated on pages 2-4 of the final Office Action mailed on November 6, 2001.

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As already discussed in more detail above, Alper does not teach or suggest that the high Tg tackifying resin concentration be less than the thermoplastic polymer concentration, as recited in the independent claims 1, 20 and 30. Nor does Alper teach or suggest that a high Tg tackifying resin be used in combination with the less amount to provide a hot melt adhesive composition with good high and cold temperature performance.

Instead, Alper teaches persons skilled in the art to formulate composition in a manner opposite to what is claimed. Indeed, one of Alper's primary objectives is to achieve better hot temperature performance, and Alper does this by using greater amount of tackifying resin in combination with less amount of SIS base copolymer-- a conventional approach as addressed above and in the specification (page 2, paragraph 2). Alper, in no way, teaches or suggests to achieve both hot and cold temperature performance as does the subject invention, which is to use less amount of at least one high Tg tackifying resin than that of the thermoplastic polymer.

Alper teaches in general that at least equal or more amount of tackifying resin is used relative to the amount of SIS block copolymer. Alper specifies in all the examples that much higher amounts of tackifying resin are used. The amounts of tackifying resin and SIS block copolymer specified in Alper are summarized in the following Table for the Examiner's convenience.

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Table I Amounts of Tackifying Resin and SIS Block Copolymer in Alper

	Tackifying resin (parts)	SIS block copolymer (parts)
Ex. 1	60	25
Ex. 2	50	35
Ex. 3	60	25
Ex. 4	60	25
Ex. 5	60	25
Ex. 6	60	25
Ex. 7	60	25
Ex. 8	60	25
Ex. 9	60	25
Ex. 10	60	25
Ex. 11	60	20
Ex. 12	58.5	30

As clearly illustrated by Table I, there is no doubt that Alper teaches that the amount of the tackifying resin(s) is higher than the amount of the block copolymer as base polymer, which is clearly opposite to what is claimed. Undoubtedly, the composition with less amount of a high Tg tackifying resin provided by the subject invention would not be obvious to persons skilled in the art following the teachings of Alper.

Furthermore, Alper does not even remotely teach or suggest a hot melt composition including a thermoplastic polymer as base polymer selected from the copolymer and terpolymers of ethylene, copolymers and terpolymers of ethylene, amorphous polyalphaolefins, homogeneous ethylene/a-olefin interpolymers, and mixtures thereof, as recited in independent claims 20, 22 and 28.

Alper specifically addresses several shortcomings associated with the use of copolymers of ethylene, e.g., ethylene vinyl acetate copolymers (EVA), and amorphous polypropylene (APP) in formulating the adhesive composition. Alper clearly states, "Those skilled in the art will recognize that adhesives based upon EVA or APP cannot

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generally be formulated as multi-purpose adhesive composition.” (emphasis added, Alper, col. 1, line 30 to col. 2, line 29). Alper, therefore, teaches to formulate composition using, instead, a high styrene content SIS block copolymer. (Alper, col. 4, lines 4-67).

Obviously, Alper teaches to formulate composition without ethylene vinyl acetate (EVA) or amorphous polypropylene (APP), which is clearly opposite to what is claimed-- a composition including a thermoplastic polymer selected from copolymer and terpolymers of ethylene, amorphous polyalphaolefins, homogeneous ethylene/alpha-olefin interpolymers, and mixtures thereof, e.g., EVA, etc. (specification, page 9, lines 20-24 and examples). Undoubtedly, the chemically different composition provided by the subject invention would not be obvious to persons skilled in the art following the teachings of Alper.

Moreover, Alper does not provide any desirability of modifying his high level of tackifying resin to a low level such that the total tackifying resin concentration would be less than the block copolymer concentration. Nor does Alper teach the use of high Tg resin when doing so. Evidently, by teaching to formulate composition with higher amount of the tackifying resin, Alper teaches away from the claimed invention and teaching away is “strong evidence of nonobviousness.” *In re Hedges*, 783 F.2d 1038, 1041, 228 USPQ 685, 687 (Fed. Cir. 1986).

Furthermore, Alper does not provide any desirability of substituting his high styrene content SIS block copolymer for a thermoplastic polymer selected from copolymers and terpolymers of ethylene, amorphous polyalphaolefins, homogeneous ethylene/alpha-olefin interpolymers, and mixtures thereof. Nor does Alper provide any

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suggestion or motivation of combining high Tg tackifying resin with the selected thermoplastic polymer. By teaching to formulate composition that cannot use ethylene EVA or APP, etc., Alper, again, teaches away from the claimed invention and again, teaching away is "strong evidence of nonobviousness." *In re Hedges*, 783 F.2d 1038, 1041, 228 USPQ 685, 687 (Fed. Cir. 1986).

If it is not shown that the prior art gives a reason or motivation to make the claimed compositions, then there is no *prima facie* case and the applicant should prevail. *In re Grabiak*, 769 f.2d 729 (Fed. Cir. 1985). Such an argument does not require the applicant to make a showing of new or unanticipated results. *Id.*

Although not required, evidence in the specification does demonstrate that the claimed compositions exhibit unexpected results relative to the compositions such as those of Alper.

For example, the adhesive compositions of Alper, when laminated with substrates, exhibit failure--complete delamination-- at 100°F (about 38°C), as illustrated by Oven Peel 100 g at 100°F. (Alper, examples 3-6 and 8-11).

In contrast, the claimed compositions do not exhibit a failure until the temperature reaches much higher degrees, e.g., higher than about 80°C (176°F), as illustrated by the 100g Peel temperature (100g Peel temperature is the temperature at which the adhesive composition exhibits failure--delamination). For example, the adhesive composition exhibits a 100g Peel temperature of 81°C (177.8°F) in Example 6. In Example 7, 100g Peel temperature is as high as 87°C (188.6°F). Clearly, the claimed compositions exhibit unexpected high heat resistance relative to those of Alper.

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As addressed above, traditionally, higher heat resistance is generally achieved using higher amounts of tackifying resins such as, in fact, taught by Alper. Alper uses much higher concentrations of tackifying resin(s), yet the composition exhibits a bonding failure at only 100°F (about 38°C).

In contrast and surprisingly, the subject invention uses lower amount of a high Tg tackifying resin, and the composition exhibits a bonding failure at much higher temperatures, e.g., as high as 87°C (188.6°F). The superior properties provided by the subject invention would not be obvious to persons skilled in the art upon reviewing the disclosure of Alper. Thus, the unexpected advantages and superior properties offered by the subject invention provide further evidence that the subject invention is not obvious over Alper.

In view of all the forgoing, the adhesive composition of claims 1-30 is patentably distinct from Alper.

Accordingly, Applicants submit that the rejection of claims 1-30 under 35 U.S.C. 103 (a) over Alper has been overcome and request that it be withdrawn.

IV. Regarding the Question at Item 10 of the Advisory Action

The Advisory Action questioned whether the undersigned is registered to practice.

The undersigned has been given the limited recognition under 37 CFR 10.9 (b) by the Director of Enrollment and Discipline to prosecute as agent the patent applications of H.B. Fuller Company. (Please see 37 CFR 10.9 (a) & (b)). A copy of the Limited Recognition under 37 CFR 10.9 (b) signed by Mr. Harry I. Moatz, the Director of Enrollment and Discipline, was submitted on January 7, 2001 together with the response

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to the final Office Action to indicate that the undersigned is permitted to practice as an agent for the patent applications of H.B. Fuller Company. Any further questions regarding the details of the Limited Recognition under 37 CFR 10.9 (b) would be directed to Mr. Valentine at 703-305-9104, Office of Enrollment and Discipline.

In view of all the forgoing, Applicants submit that all the rejections have been overcome. The claims pending in the application are now in condition for allowance and action in accordance therewith is respectfully requested. In the event that claims are not allowed, the undersigned invites the Examiner to telephone if a telephonic interview would facilitate the prosecution of this application to allowance.

A new Power of Attorney is submitted herewith according to the telephonic communication with the Examiner on January 24, 2002.

Respectfully submitted,

Date: 01/28/02

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Patent**VERSION WITH MARKINGS TO SHOW CHANGES MADE****In the Specification:**

Paragraph at line 7 of page 1, has been amended as follows:

This application [is a Continuation-In-Part] claims the priority of U.S. provisional patent application serial no. 60/091,231 filed June 30, 1998.

In the Claims:

Claims 1, 20, 28 and 30 have been amended as follows:

1. (Three time amended) A hot melt adhesive composition comprising:
- a) about 10% by weight to about 50% by weight of at least one substantially aliphatic tackifying resin having a glass transition temperature of greater than 65°C;
 - b) about 20% by weight to about 60% by weight of at least one thermoplastic polymer; and
 - c) 0% by weight to about 40% by weight of at least one wax;
- wherein said total tackifying resin concentration having a glass transition temperature of greater than 65°C is less than said [total] polymer concentration.
20. (Three time amended) A hot melt adhesive composition comprising:
- a) about 10% by weight to about 50% by weight of at least one tackifying resin having a glass transition temperature of at least 65°C;

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b) about 20% by weight to about 60% by weight of at least one thermoplastic polymer selected from the group consisting of copolymers and terpolymers of ethylene; amorphous polyalphaolefins, homogenous ethylene/ α -olefin interpolymers, and mixtures thereof; and

c) 0% by weight to about 40% by weight of at least one wax;

wherein said total tackifying resin concentration having a glass transition temperature of at least 65°C is less than said [total] polymer concentration.

28. (Twice amended) A hot melt adhesive comprising:

a) from about 10% by weight to about 80% by weight of at least one aliphatic tackifying resin having a T_g of greater than 65°C; and

b) from about 10% by weight to about 80% by weight of at least one polymer selected from the group consisting of amorphous polyalphaolefins, [rubbery block copolymers] and mixtures thereof.

30. (Twice amended) A hot melt adhesive composition comprising:

a) about 10% by weight to about 50% by weight of at least one substantially aliphatic tackifying resin having a softening point of greater than 140°C;

b) about 20% by weight to about 60% by weight of at least one thermoplastic polymer; and

d) 0% by weight to about 40% by weight of at least one wax;

wherein said total tackifying resin concentration having a softening temperature of greater than 140°C is less than said [total] polymer concentration.